

CLAIMS

WE CLAIM:

1. A method for testing etalons comprising the steps of:
 - A. mounting an etalon defining a test etalon on a stage,
 - B. illuminating said test etalon with a collimated laser beam,
 - C. detecting interference fringes in light reflected from the test etalon at a plurality of etalon rotation positions sufficient to include at least one extinction cycle,
 - D. analyzing selected interference patterns to estimate uniformity of etalon spacing.
2. A method as in Claim 1 wherein said collimated beam is configured to illuminate said test etalon at angles in the range of about 3.5 degrees.
3. A method as in Claim 1 wherein said collimated beam has a spherical wavefront error of less than 23λ .
4. A method as in Claim 1 wherein said collimated beam has a wavefront error of less than $\lambda/10$.
5. A method as in Claim 1 wherein said fringes are detected by imaging fringes on a screen.
6. A method as in Claim 1 wherein images on said screen are detected with a CCD camera.

7. A method as in Claim 1 wherein said fringes are imaged directly on pixels of a CCD camera.
8. A method as in Claim 1 wherein said test etalon is stepped through a plurality of angles and interference patterns are recorded at each of said plurality of angles using a controller comprising a digital processor programmed to keep track of pattern data and rotation angles.
9. A method as in Claim 8 wherein said etalon is stepped through at least two extension cycles.
10. A system for testing etalons comprising:
 - A. a rotational stage,
 - B. a mounting means for mounting a test etalon on said rotational stage,
 - C. a laser light source for producing a coherent light source,
 - D. collimating optics for collimating said light source to produce a collimated beam for illuminating said test etalon,
 - E. a detector for detecting interference patterns in light reflected from said test etalons.
11. A system as in Claim 10 and further comprising a control means to provide precision rotation of said test etalon on said rotation stage and for recording said interference patterns at each of a plurality of rotation positions.
12. A system as in Claim 11 wherein said control means comprises a digital processor for analyzing said interference patterns to indicate extent of uniformity of etalon spacing.